



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

July 23, 2003

Regulatory Division

Action ID. 200330312; TIP No. R-2214-A



Dr. Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Dr. Thorpe:

In accordance with the written request of November 27, 2002, and the ensuing administrative record, enclosed is a permit to authorize the discharge of dredged and fill material into waters of the United States, for construction of Section A of the U.S. Highway 25 Improvements project (T.I.P. No. R-2214-A), impacting Mud Creek, Three and One Half Foot Creek and unnamed tributaries, and adjacent wetlands, running from just north of I-26 south a distance of 3.75 miles to the intersection of US 25 and SR 1528 in Henderson County, North Carolina.

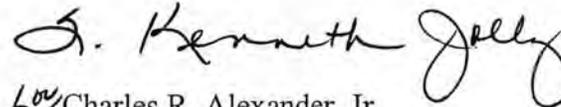
If any change in the authorized work is required because of unforeseen or altered conditions or for any other reason, the plans revised to show the change must be sent promptly to this office. Such action is necessary, as revised plans must be reviewed and the permit modified.

Carefully read your permit. The general and special conditions are important. Your failure to comply with these conditions could result in a violation of Federal law. Certain significant general conditions require that:

- a. You must complete construction before December 31, 2006.
- b. You must notify this office in advance as to when you intend to commence and complete work.
- c. You must allow representatives from this office to make periodic visits to your worksite as deemed necessary to assure compliance with permit plans and conditions.

Should you have questions, contact Mr. John W. Hendrix of my Asheville Field Office regulatory staff at telephone (828) 271-7980, extension 7.

Sincerely,



for Charles R. Alexander, Jr.
Colonel, U.S. Army
District Engineer

Enclosures

Copy Furnished with enclosures:

Chief, Source Data Unit
NOAA/National Ocean Service
ATTN: Sharon Tear N/CS261
1315 East-West Hwy., Rm 7316
Silver Spring, MD 20910-3282

Mr. Ronald Mikulak, Chief
Wetlands Section - Region IV
Water Management Division
U.S. Environmental Protection Agency
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303

Copies Furnished with special conditions
and plans:

Mr. Garland Pardue, Field Supervisor
U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Mr. Doug Huggett
Division of Coastal Management
North Carolina Department of
Environment and Natural Resources
1638 Mail Service Center
Raleigh, North Carolina 27699-1638

Mr. Ron Sechler
National Marine Fisheries
Service, NOAA
Pivers Island
Beaufort, North Carolina 28516

Mr. Ronald E. Ferrell, Program Manager
Wetlands Restoration Program
Division of Water Quality
1619 Mail Service Center
Raleigh, North, Carolina 27699-1619

Mr. David Rackley
National Marine Fisheries
Service, NOAA
219 Fort Johnson Road
Charleston, South Carolina 29412-9110

DEPARTMENT OF THE ARMY PERMIT

EX-111-111
JUL 17 2003
WILMINGTON DISTRICT OFFICE

Permittee NC Department of Transportation

Permit No. 200330312

Issuing Office USAED, Wilmington

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

Place fill material and perform mechanized land clearing impacting a total of 1.11 acres of wetlands and 1,864 linear feet of stream, for widening construction of Section A of U.S. Highway 25 from SR 1528 to just north of I-26 (T.I.P. No. R-2214-A), impacting Mud Creek, Three and One Half Foot Creek, and unnamed tributaries, and adjacent wetlands, from SR 1528 to just north of I-26, in Henderson County, North Carolina.

Project Location:

From SR 1528 to just north of I-26, in Henderson County, North Carolina.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2006. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

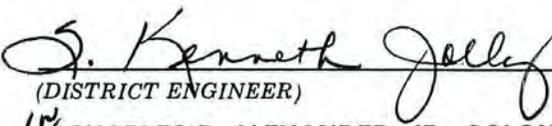
Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.



(PERMITTEE) 15 July 03

(DATE)
NC DEPARTMENT OF TRANSPORTATION

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.



(DISTRICT ENGINEER) 7/23/03

(DATE)
for CHARLES R. ALEXANDER, JR. COLONEL

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFeree) _____
(DATE)

SPECIAL CONDITIONS (Action ID: 200330312: NCDOT/TIP R-2214A)

- 1) All work authorized by this permit must be performed in strict compliance with the attached plans, which are a part of this permit.
- 2) Mitigation requirements: The permittee shall mitigate for the unavoidable impacts to a total of 0.95 acre of wetland and 1,864 linear feet of perennial stream channel by using the North Carolina Wetland Restoration (WRP) in-lieu fee program in combination with onsite channel relocation:
 - a) The Permittee shall mitigate for a total of 0.95 acre of wetland and 1,400 linear feet of perennial stream channel associated with this project by payment to the North Carolina Wetlands Restoration Program (NCWRP) in an amount determined by NCWRP, sufficient to perform 1.90 acres of wetland mitigation and 2800 linear feet of cool water stream restoration within the French Broad River basin, hydrologic map unit 06010105 (HYDROLOGIC UNIT MAP-1974, STATE OF NORTH CAROLINA). Construction within waters of the United States shall begin only after the permittee has made full payment to the NCWRP, and the NCWRP has provided written confirmation to the Corps that it agrees to accept responsibility for the mitigation work required, in compliance with the MOU between the North Carolina Department of Environment and Natural Resources and the United States Army Corps of Engineers, Wilmington District, dated November 4, 1998.
 - b) The Permittee shall relocate a 464-foot section of a Mud Creek tributary at Site 3 utilizing natural design techniques.
 - c) As-Built Survey: The permittee shall complete an as-built channel survey within sixty days of completion of the stream mitigation (relocation) project construction. The permittee shall document the dimension, pattern, and profile of the relocated channel. The permittee shall establish permanent representative cross-sections at an approximate frequency of one per 20 (bankfull-width) lengths. The permittee shall also include in the as-built survey: photo documentation at all cross-sections and structures; a plan view diagram; and vegetation information.
 - d) Monitoring Schedule: The permittee shall perform Level I monitoring each year for the 5-year monitoring period. The permittee shall submit the monitoring reports to the Corps of Engineers, Asheville Regulatory Field Office Project Manager, within sixty days after completing the monitoring. If less than two bankfull events occur during the first 5 years, the permittee shall continue monitoring until the second bankfull event is documented. The bankfull events must occur during separate monitoring years. In the event that the required bankfull events do not occur during the five-year monitoring period, the Corps of Engineers, in consultation with the resource agencies, may determine that further monitoring is not required. It is suggested that all bankfull occurrences be monitored and reported through the required monitoring period. The permittee shall perform and submit photo documentation twice each year (summer and winter) for the 5-year monitoring period, and for any subsequently required monitoring period.
 - e) Monitoring Data/Report: The permittee shall include the following information in the Level I monitoring report for the site: reference photos; plant survival analysis; and channel stability analysis. The permittee shall complete the Monitoring Data Record, Sections 1 – 3, for each cross-section, and for each year of monitoring. The permittee shall include in the monitoring reports a discussion of any deviations from as-built and an

evaluation of the significance of these deviations and whether they are indicative of a stabilizing or destabilizing situation.

- f) Stream Mitigation Success Criteria: The mitigation success criteria, and required remediation actions, will be generally based on the attached Appendix II, and the Photo Documentation, Ecological Function, and Channel Stability criteria in the "Stream Mitigation Guidelines", dated April, 2003 (available on the internet at http://www.saw.usace.army.mil/wetlands/Mitigation/stream_mitigation.html), pages 24 and 25, under "Success Criteria:".
- 3) The temporary placement or double handling of excavated or fill materials within waters or vegetated wetlands is not authorized.
- 4) The fill material will be clean and free of any pollutants except in trace quantities. Metal products, organic materials, or unsightly debris will not be used.
- 5) The permittee will maintain the authorized work in good condition and in conformance with the terms and conditions of this permit. The permittee is not relieved of this requirement if he abandons the permitted activity without having it transferred to a third party.
- 6) If the permittee discovers any previously unknown historic or archeological remains while accomplishing the authorized work, he will immediately notify the Wilmington District Engineer who will initiate the required State/Federal coordination.
- 7) This Department of the Army permit does not obviate the need to obtain other Federal, State, or local authorization required by law.
- 8) This permit does not grant any property rights or exclusive privileges.
- 9) This permit does not authorize interference with any existing or proposed Federal projects.
- 10) In issuing this permit, the Federal Government does not assume any liability for:
 - a. Damages to the permitted project uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future Federal activities initiated on behalf of the general public.
 - c. Damages to other permitted or unpermitted activities or structures caused by the authorized activity.
 - d. Design and construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
- 11) To the maximum extent practicable, stormwater shall be directed to buffer areas and retention basins, or routed through vegetated swales, with structural stabilization, as needed, before direct discharge into streams.
- 12) Stringent sedimentation and erosion control measures must be implemented and maintained on all permit sites to avoid impacts to downstream aquatic resources. All measures shall be inspected and maintained regularly, especially following rainfall events.

13) The invert of all culverts shall be buried one foot below the level of the stream bottom to allow natural bedload materials to become established in the culverts. This will allow aquatic life passage during low flow periods. This requirement is waived where solid bedrock is encountered. In the event that head cutting or other signs of stream instability is observed downstream of the culverts, the permittee shall immediately notify the Corps of Engineers to discuss remedial actions.

14) All mechanized equipment operated near surface waters shall be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

15) All conditions of the North Carolina Department of Environment and Natural Resource (NCDENR) Water Quality Certification No.3407, dated 19 December 2002, are hereby incorporated as special conditions of this permit.

16) All conditions of the North Carolina Wildlife Resources Commission (NCWRC) memorandum dated 4 February 2003 are hereby incorporated as special conditions of this permit.

17) The permittee and its contractors and/or agents shall not excavate, fill, or perform mechanized landclearing at any time in the construction or maintenance of this project within waters and/or wetlands, or cause the degradation of waters and /or wetlands, except as authorized by this permit, or any modification to this permit. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and fill activities connected with this project.

18) To ensure that all borrow and waste activities occur on high ground and do not result in degradation of adjacent wetlands and streams, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow the material, or to dispose of dredged, fill, or waste material. The permittee shall ensure that all such areas comply with the preceding condition (17) of this permit, and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This information shall include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with the preceding condition (17). All information will be available to the Corps of Engineers upon request. The permittee shall require its contractors to complete and execute reclamation plans for each waste and borrow site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the Corps of Engineers within 30 days of the completion of the reclamation work.



December 19, 2002

RECEIVED

JAN 02 2003

Mr. Gregory J. Thorpe, Ph.D., Manager
NCDOT Planning and Environmental Branch
1548 Mail Service Center
Raleigh, NC, 27699-1548

Dear Dr. Thorpe:

Re: Water Quality Certification Pursuant to §401 of the Federal Clean Water Act, US 25 from SR 1528 to just north of I-26; Henderson Co.; F.A. Project No. STP-25(3); State Project No. 8.1951101.
TIP Project Nos. R-2214A.
DWQ Project No. 011715

Attached hereto is a copy of Certification No. 3407 issued to The North Carolina Department of Transportation dated December 19, 2002.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Alan W. Klimek, P.E.

Attachments

cc: John Hendrix, USACE Asheville Field Office
Mike Parker, NCDWQ Asheville Regional Office
Central Files
File Copy



NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500. This certification authorizes the NCDOT to incur the following permanent impacts:

- 0.95 acres of fill in jurisdictional riverine wetlands;
- 0.16 acres of mechanized clearing in wetlands;
- 1,864 linear feet of jurisdictional stream channels, including 464 linear feet of stream relocation and 360 linear feet of temporary impacts.

in Henderson County, as described in the Application dated November 27, 2002.

The project shall be constructed pursuant to the application dated November 27, 2002 filed to construct improvements to US 25 from SR 1528 to just north of I-26 (TIP Project No. R-2214A).

The application provides adequate assurance that the discharge of fill material into the waters of the state with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application. Should your project change, you are required to notify the DWQ *in writing*, and you may be required to submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If this project incurs additional wetland or stream impacts, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion Control, Non-discharge and Water Supply watershed regulations. This Certification shall expire three (3) years from the date of the cover letter from DWQ or on the same day as the expiration date of the corresponding Corps of Engineers Permit, whichever is sooner.

Condition(s) of Certification:

1. NCDOT shall abide by any conditions or moratoriums as determined by the NC Wildlife Resources Commission.
2. The applicant must follow the appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of *the North Carolina Sediment and Erosion Control Planning and Design Manual* or *the North Carolina Surface Mining Manual*, whichever is more appropriate (available from the Division of Land Resources (DLR) in the DENR Regional or Central Offices) and shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standard (50 NTUs in all fresh water streams and rivers not designated as trout waters and 25 NTUs in all lakes and reservoirs);
3. NCDOT shall use *Best Management Practices for the Protection of Surface Waters* (NCDOT March 1997), specifically using all applicable preventive and control measures during the design, construction and maintenance of this project. These measures shall be implemented prior to any ground-disturbing activities to minimize impacts to downstream aquatic resources.

4. Storm water shall be directed to vegetated buffer areas, grass-lined ditches or other means appropriate to the site for the purpose of pre-treating storm water runoff, and must not be routed directly into streams. Mowing of existing vegetated buffers is strongly discouraged, so that they may be utilized for storm water sheet flow.
5. Live or fresh concrete shall not come into contact with waters of the state until the concrete has hardened.
6. There shall be no excavation from or waste disposal into jurisdictional wetlands or waters associated with this permit without appropriate modification of this Certification. If this occurs, compensatory mitigation will be required since it is a direct impact from road construction activities.
7. Placement of culverts and other structures in waters, streams, and wetlands shall be placed below the elevation of the streambed to allow low flow passage of water and aquatic life unless it can be shown to DWQ that providing passage would be impractical. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or stream beds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium shall be maintained if requested in writing by DWQ.
8. The pipes required for this project shall be designed and installed in a manner that does not initiate a headcut along the streams. NCDOT must submit a plan for written DWQ approval to address any headcutting that will occur as a result of this project.
9. *Mitigation:* Compensatory mitigation shall be the same as that approved by the US Army Corps of Engineers as long as the mitigation required equals a ratio of 1:1 restoration or creation of lost wetland acres as described in 15A NCAC 2H.0506 (h)(6). A report must be submitted to the NC Division of Water Quality that describes the final approved stream and buffer mitigation for this project within two (2) months of the issuance of the 404 permit issued by the Army Corps of Engineers.
 - Wetland impacts of 0.95 acres of riverine wetlands, mitigated at a 2:1 ratio through NC Wetlands Restoration Program for a total of 1.90 acres of mitigation.
 - Stream impacts total 1,864 linear feet in the French Broad River Basin. NCDOT proposes to provide compensatory mitigation at a 2:1. Compensatory mitigation will consist of the following:
 - 464 linear feet of on-site stream relocation using natural channel design.

The stream restoration shall be performed and maintained according to approved plans before any mitigation credit is given. If this Office determines that the stream restoration or associated riparian area has become unstable, the stream shall be repaired or stabilized using only natural channel design techniques if possible. Additionally, the vegetation in the riparian shall be maintained and/or replaced according to the approved plans. Rip-rap and other hard structures may *only* be used if required by the Division of Land Resources or a Delegated Local Program. Additionally, all repair designs must be submitted to and receive written approval from this Office before the repair work is performed.

Since the restored stream is proposed as compensatory mitigation for stream impacts, the restored portion and associated riparian buffer area shall be preserved in perpetuity through a preservation easement or some other legally binding mechanism or agreement. The above easement or other legally binding mechanism or agreement must be in place before any mitigation credit shall be given. Additionally, the stream physical and biological monitoring

plan shall be followed and reports shall be submitted to this Office after the first year and every other year afterwards for a total of five (5) years.

- NCDOT will be paying the NC Wetlands Restoration Program for the remainder of the impacts which include the 1,400 linear feet of stream channels at a 2:1 ratio (total of 2,800 linear feet of mitigation).

In accordance with 15A NCAC 2R.0500, this contribution will satisfy our compensatory mitigation requirements under 15A NCAC 2H.0506(h). Until plans are received and approved for the stream relocation using natural channel design, wetland or stream fill shall not occur.

10. Upon completion of the project, the NCDOT shall complete and return the enclosed "Certification of Completion Form" to notify DWQ when all work included in the 401 Certification has been completed. The responsible party shall complete the attached form and return it to the 401/Wetlands Unit of the Division of Water Quality upon completion of the project. NCDOT is strongly advised to send in photographs upstream and downstream of each culvert to document correct installation

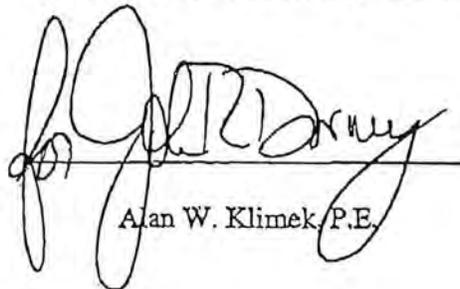
The Applicant shall require its contractors (and/or agents) to comply with all of the terms of this Certification, and shall provide each of its contractors (and/or agents) a copy of this Certification.

Violations of any condition herein set forth shall result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal Permit.

If you do not accept any of the conditions of this certification, you may ask for an adjudicatory hearing. You must act within 60 days of the date that you receive this letter. To ask for a hearing, send a written petition that conforms to Chapter 150B of the North Carolina General Statutes to the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. This certification and its conditions are final and binding unless you ask for a hearing.

This the 19th day of December 2002

DIVISION OF WATER QUALITY



Alan W. Klimek, P.E.

RECEIVED

FEB 11 2003

CESAR-CO-PA



 ☒ North Carolina Wildlife Resources Commission ☒

Charles R. Fullwood, Executive Director

TO: John Hendrix, Regulatory Project Manager
Asheville Regulatory Field Office, USACE

FROM: Marla Chambers, Highway Projects Coordinator *Marla Chambers*
Habitat Conservation Program, NCWRC

DATE: February 4, 2003

SUBJECT: Review of NCDOT's request for Department of the Army Individual Permit for
Improvements to US 25 from SR 1528 to just north of I-26 in Henderson County.
TIP No. R-2214A.

North Carolina Department of Transportation (NCDOT) is requesting a Department of the Army Individual Permit from the U.S. Army Corps of Engineers (USACE). Staff biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the information provided. These comments are provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The NCDOT proposes to widen US 25 to a five-lane curb and gutter facility for a project length of approximately 3.75 miles. The project was previously authorized in early 2002, however the authorizations have expired and, due to a change in impact thresholds, it no longer qualifies for authorization under Nationwide Permit 14. The project will impact waters of the United States at 18 locations along the corridor. Impacts include wetland & stream channel fill; extension, replacement and installation of culverts; permanent and temporary stream relocations; placement of riprap in stream channels and bridging Mud Creek using temporary causeways in the creek during construction. All stream impacts involve perennial streams. Total project impacts include 0.95 acres of wetlands and 1400 linear feet of stream. NCDOT proposes to mitigate for these impacts, at a 2:1 ratio, by using the North Carolina Wetland Restoration in-lieu fee program (NCWRP).

Mud Creek is a unique mountain stream, as it provides spawning, nursery and adult habitat for both cool-water and warm-water fishes, such as muskellunge, chain pickerel, smallmouth bass, and a variety of sunfishes and nongame fishes. Mud Creek joins the French

US 25 from SR 1528 to I-26
Mud Creek, Henderson County

2

February 4, 2003

Broad River just downstream of the project area and provides a sanctuary from the larger river for fry and juvenile fishes. NCWRC sampling has revealed evidence of adult muskellunge utilizing Mud Creek for reproduction.

Riparian buffer protection for the highly valuable and unique resources of Mud Creek is of utmost importance in this rapidly developing landscape. Providing safe public access to this recreational resource is also important. We recommend that NCDOT provide riparian improvements and safe public access in the immediate project area of Mud Creek or investigate off-site riparian protection/enhancement and public access to Mud Creek, which may generate mitigation credits for the project. We are aware of a parcel of land currently for sale adjacent to Mud Creek, just below the project boundary and west of Rugby Road bridge, which may have wetland mitigation potential as well as buffer and public access potential. We recommend NCDOT provide as much mitigation on site and along Mud Creek and its tributaries as possible prior to using the NCWRP.

NCWRC supports the decision to improve existing facilities rather than construct on a new location and to use a spanning structure over Mud Creek, however we are concerned about the aquatic resources in Mud Creek and other impacted streams of the project area. We can concur with the permit issuance if, in addition to the above recommendations, the following conditions are implemented:

1. Stringent sedimentation and erosion control measures must be implemented and maintained on the project site until project completion to avoid impacts to downstream aquatic resources. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control. Fescue should not be permitted. Erosion control matting should be used in riparian areas, including the banks of the relocated stream channel, instead of straw mulch.
2. Culverts should be designed so that one barrel, of adequate size, will carry the base flow, and the other, if needed, will carry stormwater. If multiple barrels are required, barrels other than the base flow barrel should be placed on or near stream bankfull or floodplain bench elevation (similar to Lyonsfield design). This may be accomplished by utilizing sills on the upstream end to restrict or divert flow to the base flow barrel. Culverts 48" or larger should be buried approximately 1' into the streambed. Culverts less than 48 inches in diameter should be buried to a depth equal to or greater than 20% their size to allow for aquatic life passage. These measurements must be based on natural thalweg depths. Any perched outlets should be corrected during construction.
3. The natural dimension, pattern, and profile of the stream above and below the culverts should not be modified by widening the stream channel or changing the depth of the stream.
4. Removal of vegetation in riparian areas should be minimized. Native trees and shrubs should be planted along the stream banks to reestablish the riparian zone and to provide long-term erosion control.

US 25 from SR 1528 to I-26
Mud Creek, Henderson County

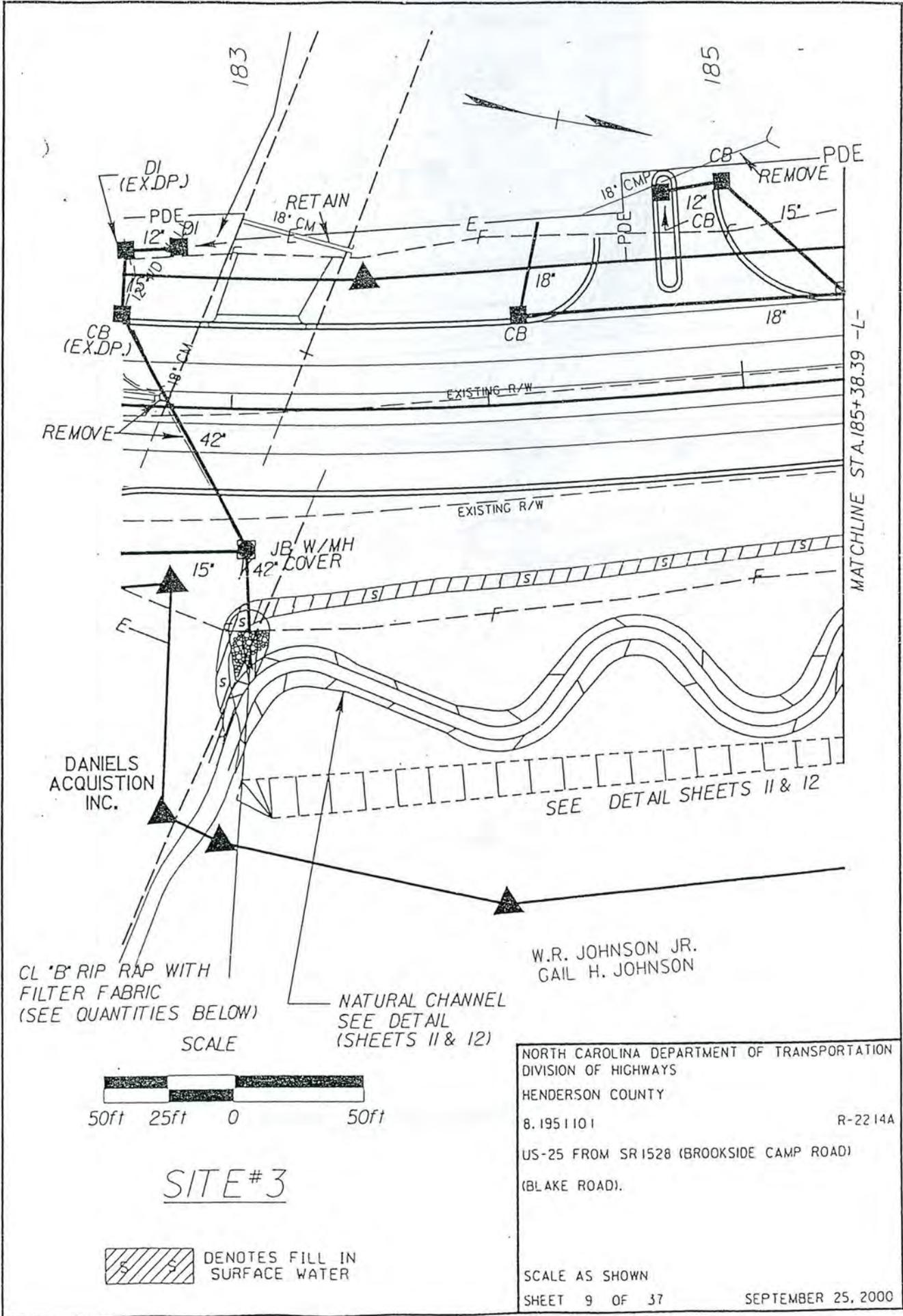
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February 4, 2003

5. Grading and backfilling should be minimized, and tree and shrub growth should be retained if possible to ensure long term availability of shoreline cover for fish and wildlife. Backfill materials should be obtained from upland sites.
6. Riprap should be minimized and installed in a manner so as not to interfere with aquatic life passage during low flow conditions. Riprap placed for bank stabilization should be limited to the stream bank below the high water mark, and vegetation should be used for stabilization above the high water elevation.
7. Under no circumstances should rock, sand, or other materials be dredged from the stream channel, except in the immediate vicinity of bridge supports, if applicable.
8. Discharge of materials into the stream from demolition of old bridges should be avoided as much as practicable. Any materials that inadvertently reach the stream should be removed.
9. Stormwater, including deck drainage, should be routed to buffer areas and not discharged directly to the stream.
10. If concrete will be used during construction, work must be accomplished so that wet (uncured) concrete does not contact surface waters. This will lessen the chance of altering the water chemistry and causing a fish kill.
11. Discharging hydroseeding mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is strictly prohibited.
12. Heavy equipment should be operated from the bank rather than in the stream channel whenever possible in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into the stream. All mechanized equipment operated near surface waters should be inspected and maintained regularly to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids or other toxic materials.

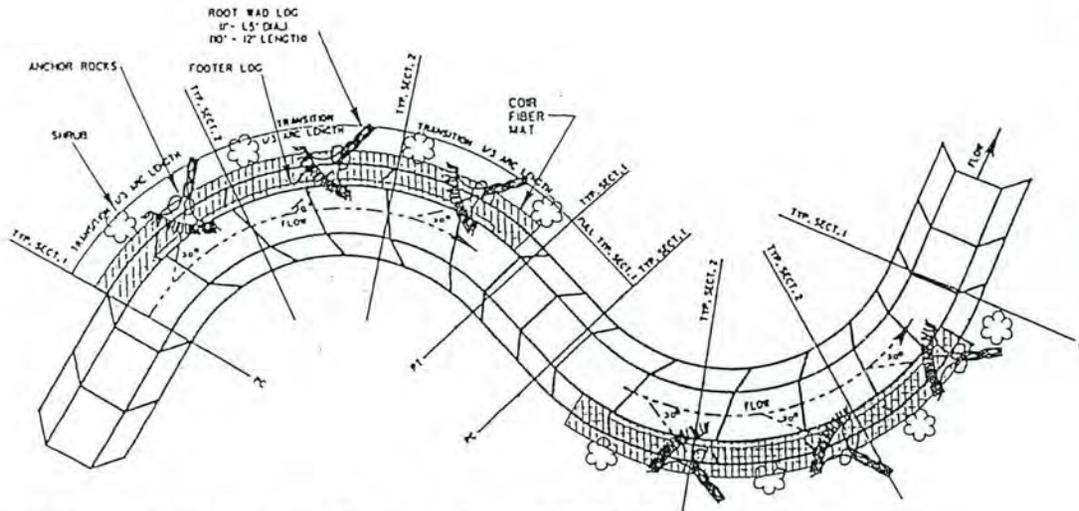
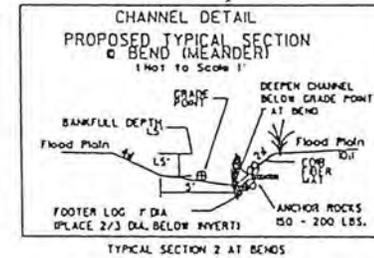
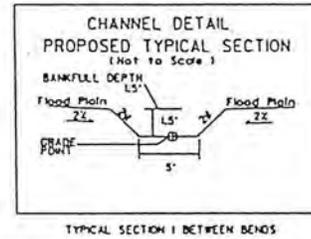
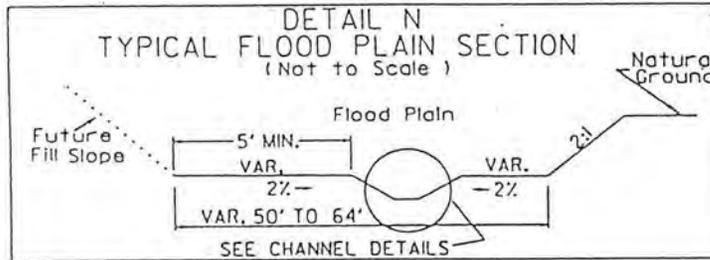
Thank you for the opportunity review and comment on this project. If you have any questions regarding these comments, please contact me at (704) 485-2384.

cc: Marella Buncick, USFWS
Cynthia Van Der Wiele, NCDWQ



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 HENDERSON COUNTY
 8.1951101 R-2214A
 US-25 FROM SR 1528 (BROOKSIDE CAMP ROAD)
 (BLAKE ROAD).
 SCALE AS SHOWN
 SHEET 9 OF 37 SEPTEMBER 25, 2000

NATURAL CHANNEL DESIGN TYPICALS



CHANNEL PLAN VIEW
SITE 3 - DETAIL SHEET

NOTES:

- NUMBER OF ROOTWADS INSTALLED TO BE DETERMINED ON SITE
- ROOTWADS TO BE SPACED 4x DIAMETER OF ROOT BASE
- FOOTER LOG ANCHOR ROCK TO BE PLACED ON THE DOWNSTREAM END OF EACH FOOTER LOG SO THAT IT IS LEANING AGAINST THE LOG ON THE SIDE AWAY FROM THE CHANNEL.
- WHEN BACKFILLING OVER AND AROUND FOOTER LOGS, ROOTWAD LOGS AND ANCHOR ROCKS FINALLY SECURE ALL COMPONENTS INCLUDING JOINTS, CONNECTIONS AND GAPS.
- PLANTINGS SHOULD BE PLACED ABOVE BANKFULL DEPTH
- FOR DESIGN SEE PLANSHEET 7

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
HENDERSON COUNTY
B.1951101 R12214A
US-25 FROM SR1528 (BROOKSIDE CAMP ROAD)
NORTH OF HENDERSONVILLE TO SR1526
(BLAKE ROAD).
SCALE AS SHOWN
SHEET 11 OF 37
SEPTEMBER 25, 2000

ITEM	EXISTING STREAM	REFERENCE STREAM	PROPOSED RELOCATION
STREAM NAME	TRIBUTARY	TO MUD CREEK	
DRAINAGE AREA (DA)	330 ac	135 ac	330 ac
CHANNEL SLOPE (S)	0.0031	0.0109	0.0057
BANKFUL WIDTH (W_{bkr})	8.60 ft	8.90 ft	11.0 ft
MEAN DEPTH (d_{bkr})	1.45 ft	0.92 ft	1.09 ft
BANKFUL X-SECTION AREA (A_{bkr})	12.44 ft ²	8.15 ft ²	12.0 ft ²
WIDTH/DEPTH RATIO (W_{bkr}/d_{bkr})	5.9	9.7	10.1
Maximum DEPTH (d_{mbkr})	1.82 ft	1.24 ft	1.50 ft
WIDTH Flood-Prone Area (W_{fpa})	15.9 ft	14.6 ft	55 ft
ENTRENCHMENT RATIO (ER)	1.85	1.64	5.0
CHANNEL MATERIALS: D50	1.4 mm	21.0 mm	1.4 mm
SINUOSITY (K)	1.00	1.11	1.28
MEANDERS:			
AVG. LENGTH	STRAIGHT	30 ft	110 ft
AVG. AMPLITUDE	0 ft	5 ft	37 ft
AVG. RADIUS	0 ft	22 ft	25 ft
DISCHARGES:			
Q BANKFULL	41 cfs	27 cfs	41 cfs
Q2	80 cfs	50 cfs	80 cfs
Q10	230 cfs	140 cfs	230 cfs
VELOCITY:			
V BANKFULL	3.3 fps	3.3 fps	3.4 fps
V2	3.6 fps	3.8 fps	4.1 fps
V10	4.9 fps	5.3 fps	7.3 fps
CLASSIFICATION	G5	G 4c	C4

STREAM DESCRIPTION AND
CLASSIFICATION DATA
SITE 3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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8.1951101

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